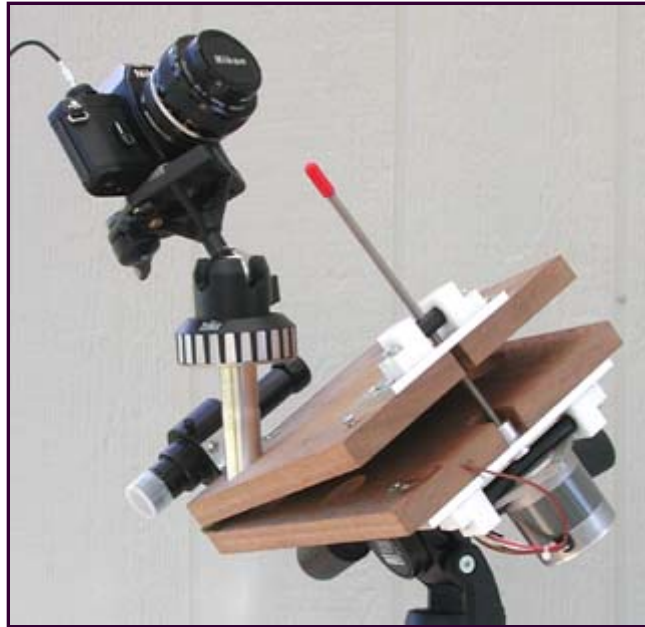
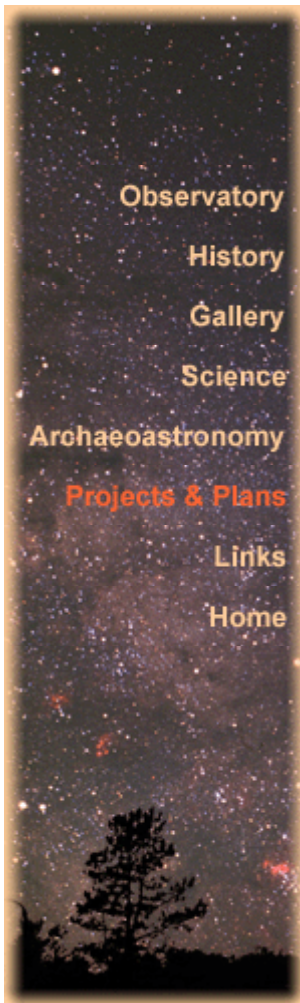




Cloudbait Observatory

Guffey, Colorado

Computerized Barndoor Tracker



Barndoor trackers are a great way to let your camera track the sky so you can make long, wide field photographs. The classic design is a simple pair of hinged plates with a drive screw between them. The problem with this design is

that a constantly driven screw does not produce constant angular motion of the platform. A number of designs have evolved to minimize this tangent error, normally involving more complex drive systems with multiple arms. My approach has been to return to the more elegant original platform, and use a computer and stepper motor to vary the drive screw rate in such a way as to produce constant angular motion. This results in a theoretical tracking accuracy of better than one arcsecond in over two hours. The true accuracy is reduced by polar alignment error and various fabrication errors, the most significant of which is periodic error in the drive screw. With a little care in alignment, 20 minute exposures with a 300mm lens yield no visible tracking errors.

Here are all the technical details of the project. You are free to use any or all of this information in any way you wish. I'm happy to answer any questions, though I don't guarantee the world's fastest response.

Downloads:

- Mechanical Drawings (not yet available)
- [Design Spreadsheet](#) (MS Excel)
- [Schematic](#) (PDF format)
- [Controller Code](#) (TECI 68HC05 format)

Additional Images:

- [Overview](#)
- [Top Plate Nut Assembly](#)
- [Bottom Plate Motor Assembly](#)
- [Reset Position Switch](#)
- [Hinge Detail](#)
- [Drive Detail](#)

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